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Teratology Study of Pentachlorobenzene in Mice No Teratogenic Effect at 50 or 100 mg/kg/Day from Day 6 to Day 15 of Gestation

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16. ABSTRACT

This study was undertaken to evaluate the teratogenic potential of pentachlorobenzene in CD-1 mice.

There was no significant difference in the maternal weight gain of the mice receiving pentachlorobenzene compared to those receiving corn oil. However, there was a significant increase in the liver weight and the liver to body weight ratio of the treated mice compared to the control mice. Pentachlorobenzene had no adverse effect on fetal development or viability as shown by the number of live fetuses, fetal weight and lack of abnormal fetuses. The single cleft palate observed in the group receiving the 50 mg/kg dose within the normal incidence for this strain of mouse. Thus, pentachlorobenzene was not teratogenic in the CD-1 mouse at 50 or 100 mg/kg/day administered orally from day 6 through 15 of gestation.

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TERATOLOGY STUDY OF PENTACHLOROBENZENE IN MICE: NO TERATOGENIC EFFECT AT 50 OR 100 MG/KG/DAY FROM DAY 6 TO DAY 15 OF GESTATION

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A recent report on the teratogenic evaluation of hexachlorobenzene (HCB) suggested that exposure to this compound during gestation resulted in cleft palates and renal malformations in CD-1 mice. The HCB used in the study contained 10% Pentachlorobenzene as a contaminant. Thus, this study was undertaken to evaluate the teratogenic potential of pentachlorobenzene in CD-1 mice. The dose levels of pentachlorobenzene used in this study were 5 to 10 times greater than those in the hexachlorobenzene study in which it was a contaminant.

Pentachlorobenzene administered orally to pregnant CD-1 mice from day 6–15 of gestation. Mice sacrificed on day 17 of gestation.

Compound	Corn oil	Pentachlorobenzene	Pentachlorobenzene
Dose	0.1 ml/mouse	50 mg/kg	100 mg/kg
No. litters	6	10	9
Mean maternal wt. gain (g)	3.0 ± 2.2	3.9 ± 2.7	2.8 ± 1.9
Mean liver/body wt. × 100	6.95 ± 0.80	7.97 ± 0.77**	9.04 ± 0.98**
Mean implants/litter	11 ± 2	13 ± 3	10 ± 2
Mean no. live/litter	9 ± 1	11 ± 4	8 ± 3
% fetal mortality	15	12	19
Mean fetal wt. (g)	0.91 ± 0.17	0.81 ± 0.14	0.81 ± 0.15
No. abnormal fetuses	0	1 (cleft palate)	0

***P value = 0.01.*

Method: Pregnant CD-1 mice with known insemination dates were purchased from Charles River Laboratories, Inc. The detection of a vaginal plug indicated day zero of gestation. Pentachlorobenzene was obtained from Pfaltz and Bauer, Inc. with a purity of > 97%. A dose of 50 to 100 mg/kg pentachlorobenzene in 0.1 ml corn oil was administered daily by gastric intubation from day 6 through 15 of gestation. The mice were sacrificed on day 17 and the fetuses removed and stored in Bouin's solution until studied by necropsy. The following conventions were observed in compiling the data. If a fetus was either dead or resorbed, it was regarded as a dead fetus. Only live fetuses were examined for malformations. In calculating the ratios of liver to body weight of the mother, maternal weight was defined as the weight of the mother on the day it was sacrificed minus the gravid uterus weight. Maternal weight gain was defined as the difference in the maternal weight on day 6 of gestation and on the day of sacrifice, corrected as above. For statistical analysis, the litter was considered the experimental unit. The data are presented as means with SD. The Student's *t* test was used to aid in evaluating the data.

Results: The table presents the findings of the study. There was no significant difference in the maternal weight gain of the mice receiving pentachlorobenzene compared to those receiving corn oil. However, there was a significant increase in the liver weight and the liver to body weight ratio of the treated mice compared to the control mice. Pentachlorobenzene had no adverse effect on fetal development or viability as shown by the number of live fetuses, fetal weight and lack of abnormal fetuses. The single cleft palate observed in the group receiving the 50 mg/kg dose within the normal incidence for this strain of mouse. Thus, pentachlorobenzene was not teratogenic in the CD-1 mouse at 50 or 100 mg/kg/day administered orally from day 6 through 15 of gestation.

1. Courtney, K.D., Copeland, M.F. and Robbins, A. (1976) *Toxicol. Appl. Pharmacol.*, 35, 239-256